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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/560,006

Applicant(s)

DE HAAN, GERARD

Examiner

Trang U. Tran

Art Unit

2622

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/88)
Paper No(s)/Mail Date ____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION

Specification

1. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Content of Specification

- (a) Title of the Invention: See 37 CFR 1.72(a) and MPEP § 606. The title of the invention should be placed at the top of the first page of the specification unless the title is provided in an application data sheet. The title of the invention should be brief but technically accurate and

descriptive, preferably from two to seven words may not contain more than 500 characters.

- (b) Cross-References to Related Applications: See 37 CFR 1.78 and MPEP § 201.11.
- (c) Statement Regarding Federally Sponsored Research and Development: See MPEP § 310.
- (d) The Names Of The Parties To A Joint Research Agreement: See 37 CFR 1.71(g).
- (e) Incorporation-By-Reference Of Material Submitted On a Compact Disc: The specification is required to include an incorporation-by-reference of electronic documents that are to become part of the permanent United States Patent and Trademark Office records in the file of a patent application. See 37 CFR 1.52(e) and MPEP § 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text were permitted as electronic documents on compact discs beginning on September 8, 2000.
- (f) Background of the Invention: See MPEP § 608.01(c). The specification should set forth the Background of the Invention in two parts:
 - (1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions of the subject matter of the claimed invention. This item may also be titled "Technical Field."
 - (2) Description of the Related Art including information disclosed under 37 CFR 1.97 and 37 CFR 1.98: A description of the related art known to the applicant and including, if applicable, references to specific related art and problems involved in the prior art which are solved by the applicant's invention. This item may also be titled "Background Art."
- (g) Brief Summary of the Invention: See MPEP § 608.01(d). A brief summary or general statement of the invention as set forth in 37 CFR 1.73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in

general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.

- (h) Brief Description of the Several Views of the Drawing(s): See MPEP § 608.01(f). A reference to and brief description of the drawing(s) as set forth in 37 CFR 1.74.
- (i) Detailed Description of the Invention: See MPEP § 608.01(g). A description of the preferred embodiment(s) of the invention as required in 37 CFR 1.71. The description should be as short and specific as is necessary to describe the invention adequately and accurately. Where elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.
- (j) Claim or Claims: See 37 CFR 1.75 and MPEP § 608.01(m). The claim or claims must commence on separate sheet or electronic page (37 CFR 1.52(b)(3)). Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation. There may be plural indentations to further segregate subcombinations or related steps. See 37 CFR 1.75 and MPEP § 608.01(i)-(p).
- (k) Abstract of the Disclosure: See MPEP § 608.01(f). A brief narrative of the disclosure as a whole in a single paragraph of 150 words or less commencing on a separate sheet following the claims. In an international application which has entered the national stage (37 CFR 1.491(b)), the applicant need not submit an abstract commencing on a separate sheet if an abstract was published with the international application under PCT Article 21. The abstract that appears on the cover page of the pamphlet published by the International Bureau (IB) of the World Intellectual Property Organization (WIPO) is the abstract that will be used by the USPTO. See MPEP § 1893.03(e).
- (l) Sequence Listing. See 37 CFR 1.821-1.825 and MPEP §§ 2421-2431. The requirement for a sequence listing applies to all sequences disclosed in a given application, whether the sequences are claimed or not. See MPEP § 2421.02.

Drawings

2. Figures 1A-1D should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claim 15 is rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. Supreme Court precedent¹ and recent Federal Circuit decisions² indicate that a statutory "process" under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing. While the instant claim recites a series of steps or acts to be performed, the claim neither

¹ *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876).

² *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008).

transforms underlying subject matter nor positively ties to another statutory category that accomplishes the claimed method steps, and therefore does not qualify as a statutory process. For example the method for processing an information including steps of determining and computing is of sufficient breadth that it would be reasonably interpreted as a series of steps completely performed mentally, verbally or without a machine. **The Applicant has provided no explicit and deliberate definitions of "determining", or "computing" to limit the steps of processing the information with a machine. *In re Bilski*.** These steps of claim 15 are performed without a machine.

5. Claim 16 is rejected under 35 U.S.C. 101 because the claimed invention is direct to non-statutory subject matter as follows. Claim 16 defines a computer program product embodying function description material. However, the claimed does not define a computer-readable medium or memory and is thus non-statutory for that reason (i.e., "when functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized"- Guidelines Annex IV). That is, the scope of the presently claimed a computer program product can range from paper on which the program is written, to a program simply contemplated and memorized by a person.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

7. Claims 1-6, 9-10 and 12-16 are rejected under 35 U.S.C. 102(a) as being anticipate by the Admitted Prior Art (Figs. 1A-1B, pages 7-11 of the Specification).

In considering claim 1, the Admitted Prior Art (Figs. 1A-1B, pages 7-11 of the Specification) discloses all the claimed subject matter, note 1) the claimed a coefficient-determining means (106) for determining a first filter coefficient is met by the filter coefficient determining unit 106 (Fig. 1A, page 8, lines 6-14), and 2) the claimed an adaptive filtering means (104) for computing a first one of the output samples on basis of a first one of the input samples and the first filter coefficient, characterized in that the coefficient-determining means (106) are arranged to determine the first filter coefficient on basis of a further input signal (Y) being correlated to the input signal (U) is met by the adaptive filtering unit 104 which calculates the luminance value of the HD output pixel on basis of the first set of luminance values and the filter coefficient as specified in equation 2 and the filter coefficient determining 106 which calculates filter coefficients on basis of the first set of luminance values and the second set of luminance values (Fig. 1A-1B, page 8, line 6 to page 9, line 25).

In considering claim 2, the claimed characterized in that the coefficient-determining means (106) are arranged to determine the first filter coefficient on basis of the input signal is met by the filter coefficient determining 106 which calculates filter coefficients on basis of the first set of luminance values and the second set of luminance values (Fig. 1A-1B, page 8, line 6 to page 9, line 25).

In considering claim 3, the claimed characterized in that the adaptive filtering means (104) comprises computing means for computing the first one of the output samples on basis of interpolation of the first one of the input samples and a second one of the input samples is met by the adaptive filtering unit 104 which calculates the luminance value of the HD output pixel on basis of the first set of luminance values and the filter coefficient as specified in equation 2 (Fig. 1A-1B, page 8, line 6 to page 9, line 25).

In considering claim 4, the claimed characterized in that the first input signal represents a first quantity and the further input signal represents a second quantity, being different from the first quantity is met by the pixel acquisition unit 102 (Fig. 1A-1B, page 8, line 1 to page 9, line 25).

In considering claim 5, the claimed characterized in that the first quantity is any one of luminance, chrominance, motion, location, temperature or sound is met by the pixel acquisition unit 102 which arranges to acquire a first set of luminance values of pixels 1-4 (Fig. 1A-1B, page 8, line 1 to page 9, line 25).

In considering claim 6, the claimed characterized in that the second quantity is any one of luminance, chrominance, motion, location, temperature or sound is met by the pixel acquisition unit 102 which arranges to acquire a second set of luminance values of pixels 1-16 (Fig. 1A-1B, page 8, line 1 to page 9, line 25).

In considering claim 9, the claimed characterized in that the coefficient determining means (106) are arranged to compute the first filter coefficient by means of an optimization algorithm is met by the filter coefficient determining 106 which

calculates filter coefficients on basis of the first set of luminance values and the second set of luminance values (Fig. 1A-1B, page 8, line 6 to page 9, line 25).

In considering claim 10, the claimed characterized in being an image scaling unit for scaling an input image being represented by the input signal and the further input signal into an output image being represented by the output signal is met by the up-conversion unit 100 (Fig. 1A-1B, page 7, line 30 to page 9, line 25).

Claim 12 is rejected for the same reason as discussed in claim 1 above.

In considering claim 13, the claimed characterized in further comprising a display device for displaying an output image being represented by the output signal is met by the high definition (HD) output to the HD television (TV) display (page 1, lines 26-28 and page 7, lines 31-34).

In considering claim 14, the claimed characterized in that it is a TV is met by the high definition (HD) output to the HD television (TV) display (page 1, lines 26-28 and page 7, lines 31-34).

Claim 15 is rejected for the same reason as discussed in claim 1 above.

Claim 16 is rejected for the same reason as discussed in claim 1 above.

Claim Rejections – 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section discloses all the claimed subject matter, note 1) the claimed of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 7 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Admitted Prior Art (Figs. 1A-1D, pages 7-11 of the Specification).

In considering claim 7, the Admitted Prior Art (Fig. 1A-1B, page 8, line 6 to page 9, line 25) disclose all the limitations of the instant invention as discussed in claim 1 above, except for providing the claimed characterized in that the coefficient determining means (106) comprises a predetermined Look-Up-Table for translating data which is derived from the further input signal, into the first filter coefficient, the predetermined Look-Up-Table being obtained by means of a training process.

The Admitted Prior Art (Figs. 1C-1D, page 9, line 26 to page 10, line 10) teaches that Fig. 1C schematically shows an alternative embodiment of the image conversion unit 101 according to the prior art, the filter coefficient-determining unit 106 comprises a compression unit 107 and a LUT 109 which data being derive during a training process.

Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to incorporate the LUT as taught by The Admitted Prior Art (Figs. 1C-1D, page 9, line 26 to page 10, line 10) into the Admitted Prior Art (Figs. 1A-1B)'s system in order to simplify the process of the video signal.

In considering claim 11, the Admitted Prior Art (Figs. 1A-1D, pages 7-11 of the Specification) discloses all the limitations of the instant invention as discussed in claim 1 above, except for providing the claimed characterized in being a noise reduction unit for converting an input image being represented by the input signal and the further input signal into an output image being represented by the output signal.

The capability of using a noise reduction unit for converting an input image being represented by the input signal and the further input signal into an output image being represented by the output signal is old and well known in the art. Therefore, the Official Notice is taken.

It would have been obvious to one ordinary skill in the art at the time of the invention to incorporate the old and well known using of a noise reduction unit for converting an input image being represented by the input signal and the further input signal into an output image being represented by the output signal into the Admitted Prior Art (Figs. 1A-1D, pages 7-11 of the Specification)'s system in order to reduce noise of the video signal.

10. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over the Admitted Prior Art (Figs. 1A-1D, pages 7-11 of the Specification) in view of Astle (US Patent No. 5,684,544).

In considering claim 8, the Admitted Prior Art (Figs. 1A-1D, pages 7-11 of the Specification) disclose the claimed characterized in that the coefficient-determining means (106) is arranged to determine the first filter coefficient on basis of a number of luminance values belonging to the further input signal is met by the filter coefficient determining 106 which calculates filter coefficients on basis of the first set of luminance values and the second set of luminance values (Fig. 1A-1B, page 8, line 6 to page 9, line 25).

However, the Admitted Prior Art (Figs. 1A-1D, pages 7-11 of the Specification) explicitly does not disclose the claimed the adaptive filtering means (104) is arranged to

compute the first one of the output samples on basis of a chrominance value belonging to the input signal.

Astle teaches that in the present invention, there is disclosed a computer-implemented method and apparatus for upscaling chroma pixels by using luma pixel information to improve the accuracy of the upscaling process (col. 2, line 66 to col. 3, line 43 and col. 5, line 44 to col. 7, line 4).

Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to incorporate the upscaling chroma as taught by Astle into the Admitted Prior Art (Figs. 1A-1D, pages 7-11 of the Specification)'s system in order to improve the accuracy of the upscaling process of the video signal.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Staelin et al. (US Patent No. 7,409,372 B2) disclose neural network trained with spatial errors.

Yang et al. (US Patent No. 7,064,792 B2) disclose format conversion.

Chen (US Patent No. 6,108,047) discloses variable-size spatial and temporal video scaler.

Kondo et al. (US Patent No. 6,323,905 B1) disclose picture conversion apparatus and method learning apparatus and method.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trang U. Tran whose telephone number is (571) 272-7358. The examiner can normally be reached on 9:00 AM - 6:30 PM, Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lin Ye can be reached on (571) 272-7372. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

March 10, 2009

/Trang U. Tran/
Primary Examiner, Art Unit 2622